

Lab2 Instruction

-- by Fangyu Gai. Any questions --> fangyu.gai@ubc.ca

=====

This lab provides you with a basic overview of launching, monitoring and managing an Amazon EC2 instance.

Amazon Elastic Compute Cloud (Amazon EC2) is a web service that provides resizable compute capacity in the cloud. It is designed to make web-scale cloud computing easier for developers. For more introduction, refer to <https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/concepts.html>.

We have 3 tasks for this lab:

- 1) Apply for an Amazon AWS account and launch an EC2 instance.
- 2) Monitor your EC2 instance.
- 3) Login your EC2 instance via SSH.

Task 1 Launch Your EC2 Instance

An instance is a virtual server in the AWS Cloud. You launch an instance from an Amazon Machine Image (AMI). The AMI provides the operating system, application server, and applications for your instance.

Sign up for AWS

When you sign up for AWS, you can get started with Amazon EC2 for free using the AWS Free Tier. You can use the free tier to launch and use a micro instance for free for 12 months.

Follow this link to create your AWS account: <https://aws.amazon.com/>


Note: You may have to provide your debit/credit card information. Don't worry about causing money if you stick with this instruction. But if you launch an instance that is not within the free tier, you incur the standard Amazon EC2 usage fees for the instance.

Launch an EC2 instance

After the account is set up, we're ready to launch an EC2 instance.

1. Open the Amazon EC2 console at <https://console.aws.amazon.com/ec2/>.

- From the Amazon EC2 console dashboard, choose **Launch Instance**.
- Now we are on the **Choose an Amazon Machine Image (AMI)** page.
- To select an AMI that is eligible for the free tier, choose Free tier only in the left pane. For simplicity, let's choose Ubuntu Server 18.04:


Ubuntu Server 18.04 LTS (HVM), SSD Volume Type - ami-0427e8367e3770df1

Free tier eligible
64-bit (x86)

Ubuntu Server 18.04 LTS (HVM),EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).
 Root device type: ebs Virtualization type: hvm

Select

- On the **Choose an Instance Type** page, we can choose the type of our instance. Note that for free tier, we have only one choice:

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.

Filter by: All instance types Current generation [Show/Hide Columns](#)

Currently selected: t2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)								
	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
<input type="checkbox"/>	General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/>	General purpose	t2.micro Free tier eligible	1	1	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.small	1	2	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.large	2	8	EBS only	-	Low to Moderate	Yes

- Click **Review and Launch** button at the bottom of the page. Then click **Launch** button at the bottom right of the next page.

We can also do some configuration of our instance by clicking "Configure Instance Details", but the default setting is enough for this lab.

- In the **Select an existing key pair or create a new key pair** dialog box, you can choose an existing key pair, or create a new one. Select *Create a new key pair*, name it (for example, "ec2-demo") and download it. After that, click *Launch* to launch your EC2 instance.

Important: In the **Select an existing key pair or create a new key pair** dialog box, you can choose an existing key pair, or create a new one

Task 2 Monitor your EC2 instance

Monitoring is an important part of maintaining the reliability, availability, and performance of your EC2 instances. This task is to show you several ways to monitor your instance.

- In your dashboard, select the instance you want to monitor.
- Click the **Status Checks** tab. Notice that both the *System reachability* and *Instance reachability* checks have passed.

3. Click the **Monitoring** tab. This tab displays CloudWatch metrics for your instance. Currently, there are not many metrics to display because the instance was recently launched. You can click on a graph to see an expanded view.
4. Top of the dashboard, in the **Actions** menu, select **Instance Settings -> Get System Log**.

System Log: i-055d4fbebcb68d1d6b



```
0.000000 Linux version 4.15.0-1021-aws (buildd@lcy01-amd64-001) (gcc version 7.
0.000000 Command line: BOOT_IMAGE=/boot/vmlinuz-4.15.0-1021-aws root=LABEL=clou
0.000000 KERNEL supported cpus:
0.000000   Intel GenuineIntel
0.000000   AMD AuthenticAMD
0.000000   Centaur CentaurHauls
0.000000 x86/fpu: Supporting XSAVE feature 0x001: 'x87 floating point registers
0.000000 x86/fpu: Supporting XSAVE feature 0x002: 'SSE registers'
0.000000 x86/fpu: Supporting XSAVE feature 0x004: 'AVX registers'
0.000000 x86/fpu: xstate_offset[2]: 576, xstate_sizes[2]: 256
0.000000 x86/fpu: Enabled xstate features 0x7, context size is 832 bytes, using
0.000000 e820: BIOS-provided physical RAM map:
0.000000 BIOS-e820: [mem 0x0000000000000000-0x0000000000009dfff] usable
0.000000 BIOS-e820: [mem 0x0000000000009e000-0x0000000000009ffff] reserved
0.000000 BIOS-e820: [mem 0x000000000000e0000-0x000000000000fffff] reserved
0.000000 BIOS-e820: [mem 0x00000000000100000-0x0000000000003fffff] usable
0.000000 BIOS-e820: [mem 0x00000000000fc000000-0x000000000000fffff] reserved
0.000000 NX (Execute Disable) protection: active
0.000000 SMBIOS 2.7 present.
0.000000 DMI: Xen HVM domU, BIOS 4.2.amazon 08/24/2006
0.000000 Hypervisor detected: Xen HVM
0.000000 Xen version 4.2.
0.000000 Netfront and the Xen platform PCI driver have been compiled for this k
0.000000 Blkfront and the Xen platform PCI driver have been compiled for this k
0.000000 You might have to change the root device
0.000000 from /dev/hd[a-d] to /dev/xvd[a-d]
0.000000 in your root= kernel command line option
0.000000 e820: last_pfn = 0x40000 max_arch_pfn = 0x400000000
0.000000 x86/PAT: Configuration [0-7]: WB WC UC- UC WB WP UC- WT
0.000000 found SMP MP-table at [mem 0x000fbc50-0x000fbc5f] mapped at [
0.000000 Scanning 1 areas for low memory corruption
0.000000 RAMDISK: [mem 0x359e1000-0x36ce7fff]
0.000000 ACPI: Early table checksum verification disabled
```

Close

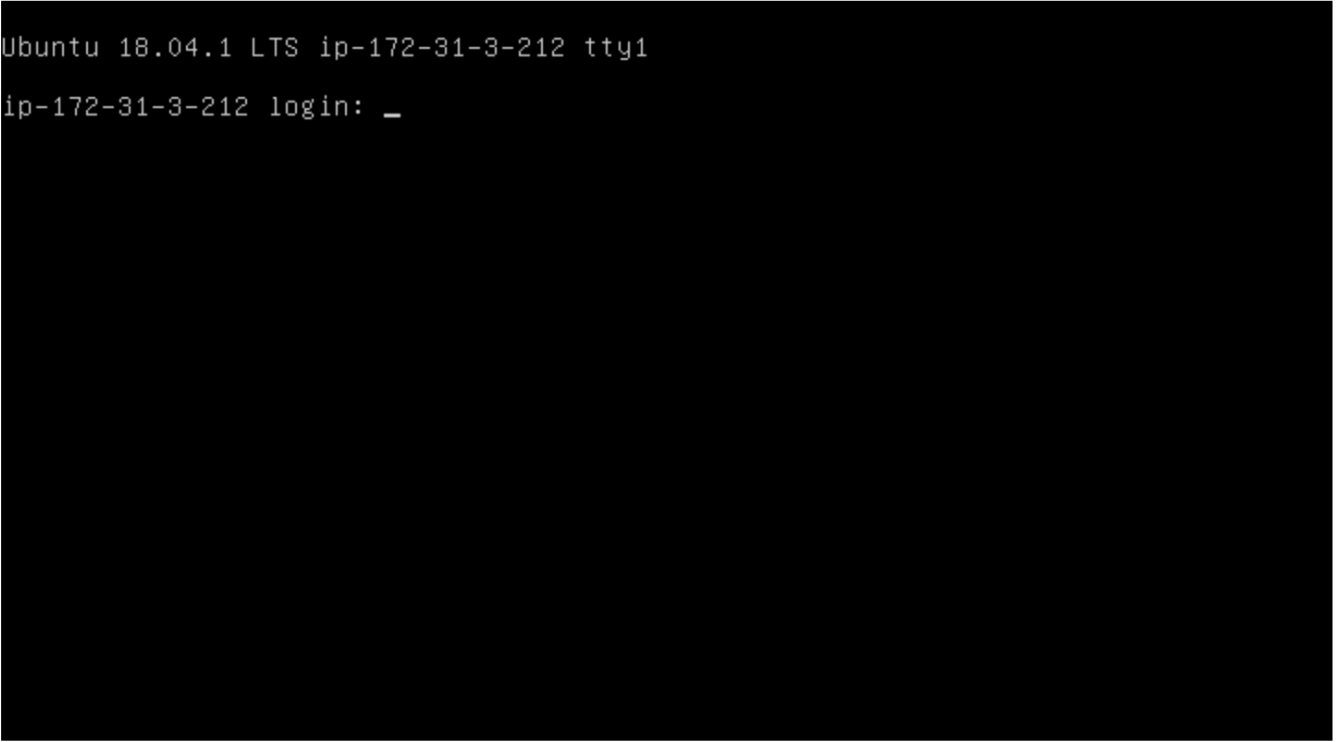
The System Log displays the console output of the instance, which is a valuable tool for problem diagnosis. It is especially useful for troubleshooting kernel problems and service configuration issues that could cause an instance to terminate or become unreachable before its SSH daemon can be started. If you do not see a system log, wait a few minutes and then try again.

5. Again, in the **Actions** menu, select **Instance Settings -> Screenshot**. This shows you what your EC2 instance console would look like if a screen were attached to it.

Get instance screenshot

Below is a screenshot of i-055d4fbeb6c68d1d6b at 2019-01-31T18:40:10.100-08:00.

 Refresh



```
Ubuntu 18.04.1 LTS ip-172-31-3-212 tty1
ip-172-31-3-212 login: _
```

Task 3 Connect your EC2 instance

If you are a Windows user, please go over this video to do this task.

<https://www.youtube.com/watch?v=bi7ow5NGC-U>

One note is that you should use "ubuntu" as the user name instead of ec2-user.

If you are using Mac or Linux, you should follow the instructions below.

Your Mac or Linux computer most likely includes an SSH client by default. You can check for an SSH client by typing ssh at the command line. If your computer doesn't recognize the command, the OpenSSH project provides a free implementation of the full suite of SSH tools. For more information, go to <http://www.openssh.org>.

1. In your dashboard page, select the instance you want to connect. Then click **Connect**.
2. In the **Connect your Instance** dialog box, you can see some instructions. Leave this for further use.
3. Open your command line shell and change the directory to the location of the private key file that you created when you launched the instance.

4. Use the `chmod` command to make sure your private key file isn't publicly viewable. For example, if the name of your private key file is `ec2-demo.pem`, use the following command:

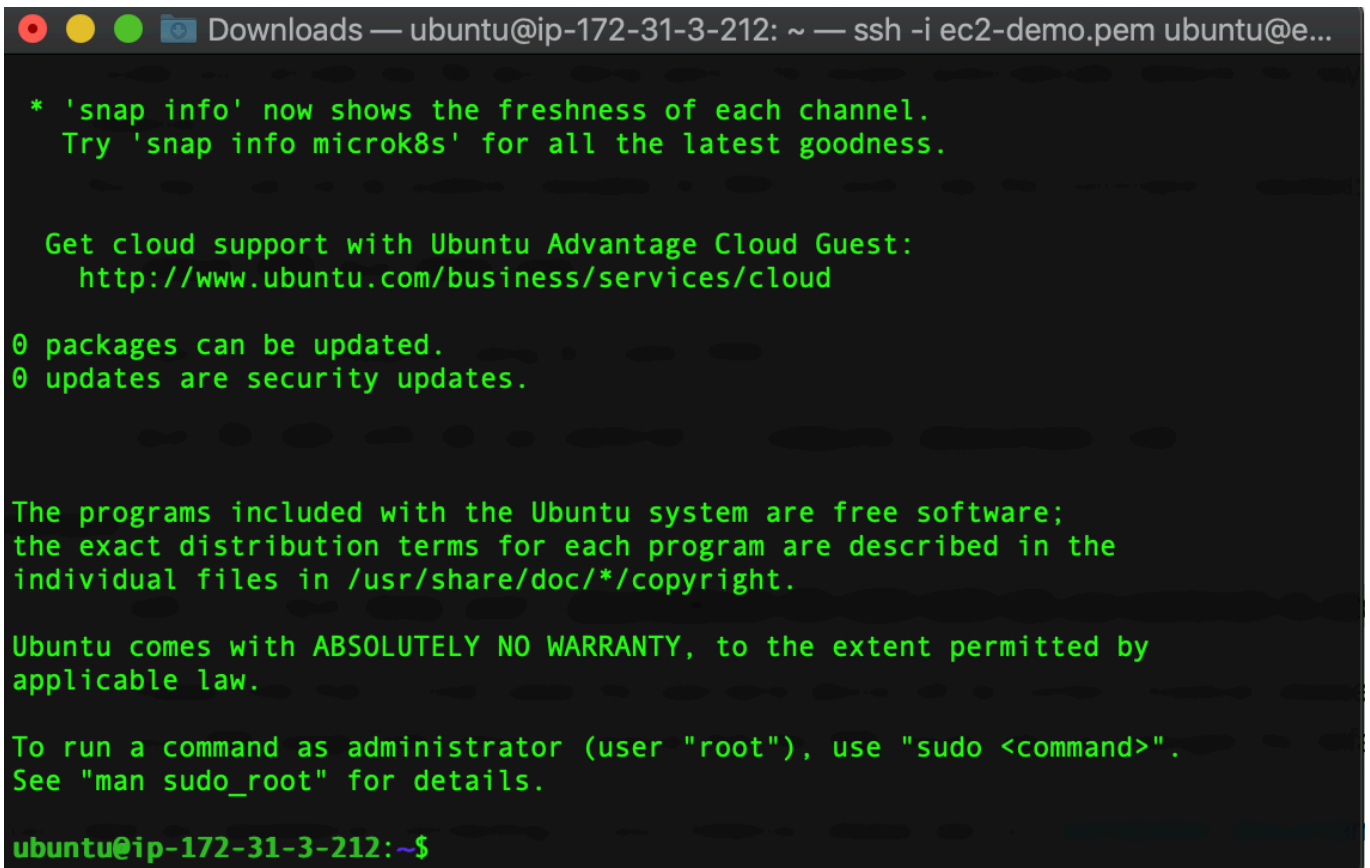
```
chmod 400 ec2-demo.pem
```

5. Use the following SSH command to connect to the instance:

```
ssh -i /path/to/ec2-demo.pem ubuntu@public_dns_name
```

Note that `"/path/to/ec2-demo.pem"` is the actual path you stored your `ec2-demo.pem`, and you can find `"publicdnsname"` in the instruction box

6. If everything goes well, your computer would be connected to your EC2 instance. Say hello to your EC2 instance!

A terminal window titled "Downloads — ubuntu@ip-172-31-3-212: ~ — ssh -i ec2-demo.pem ubuntu@e..." displays the output of an SSH connection to an Ubuntu instance. The terminal shows several green text messages: a note about 'snap info', a link to Ubuntu Advantage Cloud Guest support, package update statistics (0 packages, 0 security updates), and system notices about free software and warranty. The prompt at the bottom is "ubuntu@ip-172-31-3-212:~\$".

```
Downloads — ubuntu@ip-172-31-3-212: ~ — ssh -i ec2-demo.pem ubuntu@e...
* 'snap info' now shows the freshness of each channel.
  Try 'snap info microk8s' for all the latest goodness.

Get cloud support with Ubuntu Advantage Cloud Guest:
  http://www.ubuntu.com/business/services/cloud

0 packages can be updated.
0 updates are security updates.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-3-212:~$
```

You may be asked to add the unknown host, just type `"Y"` to continue. This may happen when you connect to the remote server for the first time.